



Removing Barriers to the Increased Use of Biomass as an Energy Source Department for Energy Efficiency and Renewable Energy, Slovenia

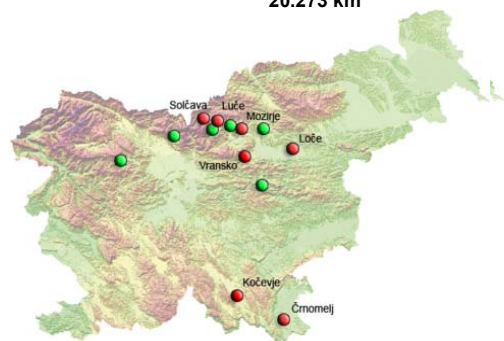
Summary

The Slovene Government and UNDP signed the contract for the project "Removing Barriers to the Increased Use of Biomass as an Energy Source" on 13 December 2001. Promoter of the project is Department for Energy Efficiency and Renewable Energy at the Ministry of Environment and Spatial Planning.

This project has been executed nationwide in Slovenia since 2002 and will end in the first half of 2007. The long term development objective of the project has been to remove barriers to the increased use of biomass as an energy source, thereby reducing the fossil fuel consumption and the associated greenhouse gas emissions. The project has also envisioned the support to promotional and training activities, finalisation of feasibility studies (FS) and business plans and preparation of Draft National Biomass Energy Plan.

During the lifetime of the project, 8 new biomass district heating (BDH) projects have been developed (in comparison to at least 3-5 projects required in the Project Document) using innovative financing by means of equities and introducing the revolving fund. The picture to the right shows the situation of new BDH projects, as well as before existing projects in Slovenia.

SLOVENIA: 2 mill. inhabitants
20.273 km²



- BDH projects prior to 2002
- GEF BDH projects (2005-2007)

End-user area

- New buildings
- Refurbishment of buildings
- Transport and mobility
- Financial instruments
- Industry
- Legal initiatives (regulations, directives, etc)
- Planning issues
- Sustainable communities
- User behaviour
- Education
- Other

Target Audience

- Citizens
- Households
- Property owners
- Schools and universities
- Decision makers
- Local and regional authorities
- Transport companies
- Utilities
- ESCOs
- Architects and engineers
- Financial institutions
- Other

Technical

- Energy efficiency
- Heating
- Cooling
- Appliances
- Lighting
- CHP
- District Heating
- Solar energy
- Biomass
- Wind
- Geothermal
- Hydro power
- Other

Context

- In compliance with the Resolution on the Strategy of Energy Use and Supply of Slovenia, the Slovenian National Energy Plan (approved in February 1996) envisages to increase the share of wood biomass within the primary energy balance by 50% (its current share is 4.4%).



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- The project, co-funded by the Global Environment Facility (GEF), has been developed with the objective of removing barriers to the increased use of biomass as an energy source. It has complemented the financial and technical support measures applied by the Slovenian Government.
- The preceding analysis conducted by the Slovenian Forestry Institute estimated a potential of 600.000 tons of wood biomass, which could be used for district heating, either in heat-only or in co-generation plants.
- Wood industry in Slovenia is mostly not able to invest in BDH projects due to problems related to its core business.

Objectives

The general objective of the UNDP GEF - sponsored programme is to raise the awareness of Slovenian communities on the advantages of wood-biomass technologies through the identification and development of some demonstration projects in this field. The BDH pilot projects will be complemented by a wider set of feasibility studies and by the development of a National Biomass Energy Programme, as well as with different trainings, organised to strengthen the domestic capacity for promoting and planning biomass energy projects.

By the end of the project, Slovenian communities should count on a set of proven experiences that can be easily replicated in their communities, and with appropriate training material and legislative measures that make the uptake of such projects easier.

Process

The Department for Energy Efficiency and Renewable Energy is the executing and implementing agency of the project. It has appointed the national project director Mr. Jani Turk, MSc. and PIU consisting of project manager Mr. Damir Staničič, MSc. and technical adviser Mr. Lojze Šubic.

A BDH investments financing approach of 25% equity using GEF funds, 25% owner equity, 25% grant (from government of Slovenia co-financing) and 25% Ecofund loan was decided to be the most appropriate to the situation in the target communities, and sale of the 25% equity share of the Fund would take place 3 to 5 years after the project investment. Fund approach of using the GEF investment as "soft" equity was established as a pilot scheme to test its viability. Once the Fund equity share in the initial projects is sold, new project investments can be supported with this capital.

The call for tenders providing the grant amounting up to 25% of the BDH investment and the same amount of GEF project equity has been announced in June 2003. First projects, Kočevje and Vransko applied for funding. First contracts were signed with the Energetika Projekt Vransko in June 2004 and Komunala Kočevje in July 2004. In second half of 2006 another 4 contracts have been signed, one of that covering 3 smaller BDH systems. The table below shows more detailed information on supported investment projects. Shareholders of proponent companies vary from municipalities to private enterprises or physical persons.

BDH Project/ municipality	Biomass boiler MW	Heat production GWh	Start-up year	Investment VAT 0% 000 €	Shareholders of company/heating plant
Vransko	2+1.2	6.6	May 2005	2,210	Municipality of Vransko, KIV, BACO, NIVO, GEF
Kočevje*	4.5	21	Oct. 2005	2,170	Municipality of Kočevje, GEF
Mozirje-Luče - A	0.5	0.5	Febr.. 2007	225	Mr. Rok Suhodolnik, GEF
- B	0.5+0.11	1.1	Jan. 2007	454	"-
- C	0.5+0.11	0.7	Jan. 2007	787	"-
Slovenske Konjice/Loče	1	2.4	March 2007	806	Mr. Alojz Cugmajster, Housing fund of Mun. Slovenske Konjice, GEF
Solčava	0.22	0.5	Febr. 2007	190	Mr. Rok Suhodolnik, GEF
Črnomelj/Čardak	2.2	3.6	Jan. 2007	2,020	ENSA d.o.o., GEF
* Includes wood biomass boiler and only limited extension of DH network					



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The project has targeted the Ministry of Environment and Spatial Planning (complementing their existing programs and provided important needed funds to promote demonstration projects) and Ministry of Agriculture, Forestry and Food (promoting the use of biomass for district heating among farmers and foresters). Further on 40 communities had signed Letters of Interest to participate in the project and applied for the preparation of biomass district heating feasibility studies. Studies revealed symptomatic deficiencies in investment preparation (overestimated heat consumption, oversized biomass boilers, high proportion of engineering costs, unrealistic financing sources, non feasible summer operation and too low heat prices) The communities welcomed the feedback and worked with the PIU to improve their project designs.

Several large and smaller companies have explored potential business and investment opportunities in the biomass field, and this project has acted as an important vehicle to assist them in their evaluation of BDH projects and biomass supply options that they would not have done at this time if not for the GEF project. Newly formed regional development groups are increasingly supporting modern biomass technology as an effective development tool for BDH and households.

The project is creating opportunities for forest owners (many of whom are farmers) to benefit from their holdings. However, achieving this potential is a difficult challenge because of the small size of the forest holdings (the average is 3 hectare) in Slovenia.

The project has involved Forestry Service, Agricultural Advisory Service and Energy Advisory Service to create awareness of their relative activities, transfer knowledge based on their relative experiences and promote synergies between their activities that will more effectively promote biomass utilization.

Project is providing training and feasibility study opportunities for Slovenian consultants in the biomass area, and this is strengthening their capacity to more effectively promote this field.

Financial resources and partners

The total project costs are 9.218 kEuro. Sources of funding are seen from the table below.

The UNDP GEF sponsorship		US \$ 4.300.000	€ 3.359.375
Parallel Financing	Government. of Slovenia	US \$ 2.500.000	€ 1.953.125
	Ecofund of SLO-credits	US \$ 400.000 (in kind)	€ 312.500 (in kind)
	Communities	US \$ 2.500.000	€ 1.953.125
	Others/privat	US \$ 1.500.000	€ 1.171.875
Total		US \$ 11.800.000	€ 9.218.750

GEF - Global Environment Facility has earmarked through UNDP the amount of 3.359 kEuro for project execution; out of that is 1.953 kEuro available for equity financing of BDH projects and the remaining amount of 1.406 kEuro for technical assistance. The last sum covers the PIU operation costs and execution of several promotional activities like the preparation of a guidebooks and other training material, organisations of visits and demonstrations, excursions, trainings, as well as public awareness campaign execution.

Environmental Fund of Republic of Slovenia has offered favourable credits for development of BDH projects and will serve as Fund Manager also after termination of GEF project.

Communities and/or private investors have participated in different manners, suited to arrangements of individual BDH project financing.



Results

This GEF project was designed to support the development of the initial BDH projects by covering the learning costs, reducing investor risks and demonstrating the technical and financial feasibility of the projects to the local communities and residents. The project has focused on district-heating technologies, but other biomass uses and applications, such as individual biomass boilers have also been dealt with. The list of realized investment projects is seen from the table above and shows higher result, as planned.

The project supported 40 feasibility studies for BDH projects. Studies for communities were prepared according to the requirements of the relevant local and international financial organisations. The investment proposals brokerage event was organised in April 2004 to stimulate the networking of communities with promising FS-s and interested strategic partners willing to discuss the possibilities for their co-funding.

The PIU has conducted meetings with more than 50 communities and industry representatives to raise public awareness, provide information and support the development of projects. In addition, training materials have been developed to ensure the proper development of the local public acceptance of BDH projects.

In all 4 years of project duration, the PIU has managed the tender process and project activities, including capacity building, developing a pipeline of projects for the Fund, and promoting the sustainable use of biomass in Slovenia. Education for planners of small-scale biomass boilers, as well as for professional staff engaged with their installation and operation (installers, chimney sweepers) and permanent education of planners in the field of larger installations have been important part of the project. Specialized two two-days trainings were organized for the staff involved in the implementation of the Quality Management Systems at developing BDH projects in Slovenia. The list of organized trainings and published leaflets/brochures in Slovene language are given in the tables below.

No	Title	Date
1	Seminar Biomass Energy Supply Contracting in European Practice	20 th November 2006
2	Biomass Excursion to Notranjska and Dolenjska Region	22 th Nov., 29 th Nov., 6 th Dec. 2006
3	2 nd Seminar Quality Management for Planning Biomass Heating Plants	11 th – 12 th May 2006
4	Seminar Quality Management at Planning Woody Biomass Heating Plants	1 st – 2 nd December 2005
5	Expert Excursion to Tirol region (Austria, Italy)	10 th – 12 th October 2005
6	Training of Planers in field of Small Biomass Boilers	26 th – 27 th May 2005
7	2 nd Training - Installers in field of Small Biomass Boilers	21 st - 22 nd April 2005
8	Training - Chimney Sweepers in field of Small Biomass Boilers	22 nd - 23 rd March 2005
9	Training - Installers in field of Small Biomass Boilers	18 th – 19 th November 2004
10	2 nd Meeting on Biomass Energy Use - Advisory Net	21 st May 2004
11	4 th International Round Table: Operation of Biomass District Heating Systems	6 th - 7 th May 2004
12	International Brokerage Event - Investing in Biomass District Heating Systems in Slovenia	13 th April 2004
13	Meeting on Biomass Energy Use - Advisory Net	6 th - 7 th February 2004
14	2 nd Training - Woody Biomass District Heating	29 th - 30 th November 2003
15	Training - Woody Biomass District Heating	24 th - 25 th August 2003



No	Title	Descriptions	Year	Reprint
1	Production, Processing and Use of Woody Biomass by Individual Users	Guidebook	2004	
2	Biomass Boilers for Central Heating	Brochure		2004
3	Efficient use of Biomass in Prekmurje Region	Brochure	2005	
4	Wood - Domestic, Renewable and Environment Friendly Source of Energy	Brochure	2005	
5	Heating with Wood	Brochure	2005	
6	Heating with Wood	Leaflet	2005	2006
7	Quality Management	Guidebooks (4)	2005	
7.1	1. Q-Instruction for Quality			
7.2	Production, Processing and Use of Woody Biomass by Individual Users			
7.3	3. Standard Switch of Boilers			
7.4	4. Handbook for Planers			
8	Quality Management	Leaflet	2005	
9	Chimney Systems for Small Houses	Brochure	2006	
10	Wood - From the Forest to the Boiler	Brochure	2006	
11	Biomass District Heating; Review of Legislation Procedures	Brochure	2006	
12	Feasibility Studies/Business Plan for Biomass District Heating	Brochure	2006	
13	Removing Barriers to the Increased Use of Biomass as an Energy Source, Slovenia	Leaflet	2007	

An effective web site containing brochures and leaflets downloadable in electronic format and a lot of more technical information on all aspects of the biomass industry in Slovenia has been developed. The internet page <http://www.gov.si/aure> has been continuously updated.

The project has had the immediate impact of stimulating 2.5 million of grant funds from the government of Slovenia that would not have otherwise been provided. Government ministries have become more aware of the potential of biomass energy. Targets for biomass energy have been specified in the National Energy Plan relative to achieving the Kyoto targets for Slovenia. Energy companies, communities, equipment suppliers, consultants, public relations companies, mass-media and NGOs have focused attention of biomass energy because of this project.

Lessons learned and repeatability

Before starting the GEF project, the following obstacles have been noted, causing delays to woody biomass district heating development:

- insufficient informing of the general and professional public about the fact that using woody biomass in modern equipment represents an environmentally friendly and sustainable energy source,
- a relatively small number of planners / professional institutions possess experience in biomass energy use,
- unavailability of the investment-technical documentation that would enable decision taking and acquisition of financial sources,
- unreliable long term financial source made available by the government for project promotion,
- non-critical favouring of gasification of towns with good possibilities for woody biomass exploitation,
- relatively bad financial situation in wood processing plants with boilers for woody biomass exploitation,
- absence of willing project owners for district heating (for instance communities, boiler owners or energy utilities) that would organise and stimulate project implementation.

While first three items were seriously addressed and some good results have ensued, the last three points are still weak and need additional actions. Long-term financing is being considered in the framework of EU structural funds for the agricultural sector, as well as in National Development Program under the item Sustainable Energy.



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Necessary organized measures, needed to promote the use of biomass as an energy source were suggested in draft Operative Program for Biomass Energy Use in Slovenia.

The project, offering the support for BDH investment projects in form of subsidies and GEF equities, accompanied with coordinated promotional and educational activities, has proved its ability to start or to foster organized activities in biomass energy field.

The practice is replicable also in other countries, provided that skilled PIU is selected by executing agency and assigned to appropriate support.

The Fund design has added significant complexity and delay to the initial project development activities and has discouraged some potential project owner. The project document states that the initial capital of the Fund will be transferred from the GEF to the Government of Slovenia. Therefore, the project equity controlled by the Fund is actually held in trust for the government and is considered a state asset. Under Slovenian law, the sale of all state assets must be open to the public, and the original concept that the GEF investment would actually be a delayed equity investment by the project owners could not be fully achieved. Independent disposal of Fund equity by PIU, controlled by Steering Committee, could contribute to more flexible and quicker disbursement of financial means.

Contact for more information:

Project Web Site: <http://www.gov.si/aure>

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Printed reports or other literature available: Downloads of prepared brochures and leaflets in Slovene language are available at above Web Site. Recent leaflet gives short information on project. http://www.aure.si/knjiznica/GEF/Gef_EN_07.pdf